CLAIMS

1. A method for isolating macromolecules comprising:

coating an inner wall of a test tube with a defined quantity of beads;

coating the beads with a capture reagent of the macromolecule of interest;

incubating the coated beads with a solution containing the macromolecule under conditions to allow binding of the macromolecule to the binding partner;

washing the coated beads with the bound macromolecule with a wash buffer to remove unbound material while maintaining binding of the macromolecule to the binding partner; and

eluting the macromolecule from the binding partner.

2. The method of claim 1, wherein the beads are glass microbeads.

3. The method of claim 1, where in the beads are polymer microbeads.

4. The method of claim 3, wherein the microbeads are agarose.

5. The method of claim 1, wherein the binding partner is attached to the beads by at least one linker molecule.

6. The method of claim 1, wherein the linker molecule is aminopropyltriethyoxysaline.

7. The method of claim 1, wherein the linker molecule is cyanogen bromide.

8. The method of claim 5, wherein in the linker molecule is a chemical cross-linking agent.

9. The method of claim 8, wherein the cross-linking agent is dimethyl suberimidate.

10. The method of claim 5, wherein the linker molecule is an antibody.

11. The method of claim 5, wherein the linker molecule is protein A or protein G.

12. The method as in claim 1, wherein the wash buffer is removed by inversion of the tube.

13. A method for coating an inner wall of a plastic tube with glass beads comprising:

heating a substantially quantity of beads to a temperature sufficient to superficially melt the inner wall of the tube to be coated;

filling the tube to a defined level with the heated beads; and

removing unattached beads.

14. The method of claim 13, wherein the inner wall of the tube comprises a bottom portion of the inner wall.

15. A method for coating a tube with polymer microbeads comprising:

heating a defined portion of an inner wall of the tube to its melting point;

filling the tube with polymer microbeads to cover the portion of the wall heated to its melting point; and

removing unattached polymer microbeads.

16. The method of claim 15, wherein the polymer microbeads are agarose beads.

17. The method of claim 15, wherein the inner wall of the tube is heated using a heat gun.

18. The method of claim 15, wherein the inner wall of the tube is heated using infrared irradiation.

19. The method of claim 15, wherein the inner wall of the tube is heated using a filament.

20. The method of claim 15, wherein the inner wall of the tube comprises a bottom portion of the inner wall.

21. An apparatus comprising a tube with an inner wall and a bottom portion, wherein the inner wall of the bottom portion of the tube is coated with beads.

22. The apparatus of claim 21, wherein the beads comprise glass.

23. The apparatus of claim 21, wherein the beads comprise polymer microbeads.

24. The apparatus of claim 23, wherein the polymer microbeads comprise agarose.

25. An apparatus for preparation of glass bead coated tubes comprising:

a container with a top opening for heating glass beads;

a heating element in functional contact with the container;

a first conduit with a first and second end, wherein the first end of the conduit is functionally connected to the top opening of the container and the second end of the conduit is shaped to fit snugly inside a tube to be coated with beads; and

a pivotable rod functionally attached to the container to allow the container to be rotated vertically at least about 180 degrees.

26. A method for isolating guanine nucleotide-binding proteins for determination of guanine nucleotide ratios comprising:

coating an inner wall of a test tube with a defined quantity of glass beads wherein the beads have a surface;

reacting the beads with an agent to modify the surface of the beads to provide a plurality of free amino groups;

reacting the free amino groups on the beads with a bifunctional amine cross-linker to provide a plurality of sites for binding a guanine nucleotide-binding protein binding partner;

incubating the coated beads with a solution containing the guanine nucleotide-binding protein under conditions to allow binding of the guanine nucleotide-binding protein to the binding partner while inhibiting nucleotide hydrolysis or release;

washing the coated beads with the bound guanine nucleotide-binding protein with a wash buffer to remove unbound material while maintaining binding of the guanine-nucleotide binding protein to the binding partner and inhibiting nucleotide hydrolysis and release;

releasing the bound nucleotide from the guanine-nucleotide binding protein; and

determining the ratio of guanine nucleotides released from the guanine nucleotide-binding proteins.